

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims

1-60. (Cancelled)

61-69 (Withdrawn)

70-72. (Cancelled)

73. (New) A process for detecting a marker in a sample comprising the following steps:

(a) providing a sample comprising a first and a second marker;

(b) contacting the sample with a first recognition species that recognizes the first marker;

(c) contacting the sample with a second recognition species that recognizes both the first marker and the second marker;

(d) contacting the sample with a third recognition species that recognizes the second marker; and

(e) detecting the presence of a complex comprising the first, second, and third recognition species.

74. (New) The detection process according to claim 73, wherein the first recognition species is immobilized on a support.

75. (New) The detection process according to claim 74, wherein the support is a solid or gelatinous material.

76. (New) The detection process of claim 75, wherein the solid or gelatinous material is selected from the group consisting of ceramic, metal, glass, plastic, crystalline material, cellulose, and structural proteins.

77. (New) The detection process according to one of claim 73, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is selected from the group consisting of a peptide, peptoid, protein, saccharide, and a nucleic acid.

78. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is selected from the group consisting of an extracellular domain of a membrane-based receptor, an antibody or a functional part thereof, an Fv fragment, a single-chain Fv fragment (ScFv), and a Fab fragment.

79. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is a cell or a cell constituent selected from the group consisting of a lipid, glycoprotein, filament constituent, lectin, liposome, mitogen, antigen, secondary metabolite, and hapten.

80. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the

first marker, and the second marker is a virus or a virus constituent selected from the group consisting of a capsid, and a viroid.

81. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is a single-stranded or double-stranded nucleic acid selected from the group consisting of DNA, RNA, p-RNA, p-DNA, PNA, and CNA.

82. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, and the third recognition species interacts with at least one of the first marker and the second marker by means of a non-covalent interaction selected from the group consisting of hydrogen bonds, salt bridges, stacking, formation of metal ligands, charge-transfer complexes, Van-der-Waals forces, and hydrophobic interactions.

83. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is coupled to a label.

84. (New) The detection process according to claim 73, wherein at least two of the first recognition species, the second recognition species, and the third recognition species are coupled to different labels.

85. (New) The detection process according to claim 73, wherein at least one of the first marker and the second marker is selected from the group consisting of a LOCI label, FRET label, fluorescence quenching label, SPA label, fluorescence label, enzymatic label, redox label, and spin label.

86. (New) The detection process according to claim 85, wherein a signal from at least one of the first marker and the second marker is amplified.

87. (New) The detection process according to claim 73, wherein the step of detecting the presence of the complex is carried out competitively.

88. (New) The detection process according to claim 73, wherein at least one of the first marker and the second marker is a natural or unnatural, single-stranded or double-stranded nucleic acid and the other of the first marker or the second marker is an antigen.

89. (New) The detection process according to claim 73, wherein at least one of the first marker and second marker is a natural or unnatural, single-stranded or double-stranded nucleic acid and at least one of the first recognition species, the second recognition species, and the third recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid.

90. (New) The detection process according to claim 73, wherein at least one of the first marker and second marker is an antigen and at least one of the first recognition species, the second recognition species, and the third recognition species is an antibody or an antibody derivative.

91. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid and at least one of the remaining first recognition species, the second recognition species, and the third recognition species is an antibody or an antibody derivative.

92. (New) The detection process according to claim 73, wherein the first recognition species, the second recognition species, and the third recognition species are each a natural or unnatural, single-stranded or double-stranded nucleic acid.

93. (New) The detection process according to claim 73, wherein the first recognition species, the second recognition species, and the third recognition species are each an antibody or antibody derivative.

94. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a composite of a first natural or unnatural, single-stranded or double-stranded nucleic acid and a second natural or unnatural, single-stranded or double-stranded nucleic acid.

95. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a composite of a first antibody or antibody derivative and a second antibody or antibody derivative.

96. (New) The detection process according to claim 73, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a hybrid comprising a natural or unnatural, single-stranded or double-stranded nucleic acid and an antibody or antibody derivative.

97. (New) The detection process according to claim 73, wherein the first recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid and the second recognition species is a hybrid comprising a natural or unnatural, single-stranded or double-stranded nucleic acid and an antibody or antibody derivative.

98. (New) The detection process according to claim 73,
wherein the first recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid;
wherein the second recognition species is a hybrid comprising a first natural or unnatural, single-stranded or double-stranded nucleic acid and a second natural or unnatural, single-stranded or double-stranded nucleic acid; and
wherein the third recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid.
99. (New) The detection process according to claim 73,
wherein the first recognition species is an antibody or an antibody derivative;
wherein the second recognition species is an antibody or an antibody derivative; and
wherein the third recognition species is a is an antibody or an antibody derivative.
100. (New) The detection process according to claim 73, wherein at least one of the first marker and the second marker is a disease pathogen, disease marker, toxin, and allergen.

101. (New) A process for detecting a marker in a sample comprising the following steps:

- (a) providing a sample comprising a first and a second marker;
- (b) contacting the sample with a first recognition species that recognizes the first marker;
- (c) contacting the sample with a second recognition species, wherein the second recognition species recognizes the first marker and a third recognition species, wherein the third recognition species recognizes the second marker and the second recognition species;
- (d) contacting the sample with the third recognition species; and
- (e) detecting the presence of a complex comprising the first, second, and third recognition species.

102. (New) The detection process according to claim 101, wherein the first recognition species is immobilized on a support.

103. (New) The detection process according to claim 101, wherein the support is a solid or gelatinous material.

104. (New) The detection process of claim 103, wherein the solid or gelatinous material is selected from the group consisting of ceramic, metal, glass, plastic, crystalline material, cellulose, and structural proteins.

105. (New) The detection process according to one of claim 101, wherein at least one of the first recognition species, the second recognition species, the third recognition

species, the first marker, and the second marker is selected from the group consisting of a peptide, peptoid, protein, saccharide, and a nucleic acid.

106. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is selected from the group consisting of an extracellular domain of a membrane-based receptor, an antibody or a functional part thereof, an Fv fragment, a single-chain Fv fragment (ScFv), and a Fab fragment.

107. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is a cell or a cell constituent selected from the group consisting of a lipid, glycoprotein, filament constituent, lectin, liposome, mitogen, antigen, secondary metabolite, and hapten.

108. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is a virus or a virus constituent selected from the group consisting of a capsid, and a viroid.

109. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, the third recognition species, the first marker, and the second marker is a single-stranded or double-stranded nucleic acid selected from the group consisting of DNA, RNA, p-RNA, p-DNA, PNA, and CNA.

110. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, and the third recognition species

interacts with at least one of the first marker and the second marker by means of a non-covalent interaction selected from the group consisting of hydrogen bonds, salt bridges, stacking, formation of metal ligands, charge-transfer complexes, Van-der-Waals forces, and hydrophobic interactions.

111. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is coupled to a label.

112. (New) The detection process according to claim 101, wherein at least two of the first recognition species, the second recognition species, and the third recognition species are coupled to different labels.

113. (New) The detection process according to claim 101, wherein at least one of the first marker and the second marker is selected from the group consisting of a LOCI label, FRET label, fluorescence quenching label, SPA label, fluorescence label, enzymatic label, redox label, and spin label.

114. (New) The detection process according to claim 113, wherein a signal from at least one of the first marker and the second marker is amplified.

115. (New) The detection process according to claim 101, wherein the step of detecting the presence of the complex is carried out competitively.

116. (New) The detection process according to claim 101, wherein at least one of the first marker and the second marker is a natural or unnatural, single-stranded or double-stranded nucleic acid and the other of the first marker or the second marker is an antigen.

117. (New) The detection process according to claim 101, wherein at least one of the first marker and second marker is a natural or unnatural, single-stranded or double-stranded nucleic acid and at least one of the first recognition species, the second recognition species, and the third recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid.

118. (New) The detection process according to claim 101, wherein at least one of the first marker and second marker is an antigen and at least one of the first recognition species, the second recognition species, and the third recognition species is an antibody or an antibody derivative.

119. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid and at least one of the remaining first recognition species, the second recognition species, and the third recognition species is an antibody or an antibody derivative.

120. (New) The detection process according to claim 101, wherein the first recognition species, the second recognition species, and the third recognition species are each a natural or unnatural, single-stranded or double-stranded nucleic acid.

121. (New) The detection process according to claim 101, wherein the first recognition species, the second recognition species, and the third recognition species are each an antibody or antibody derivative.

122. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, and the third recognition species

is a composite of a first natural or unnatural, single-stranded or double-stranded nucleic acid and a second natural or unnatural, single-stranded or double-stranded nucleic acid.

123. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a composite of a first antibody or antibody derivative and a second antibody or antibody derivative.

124. (New) The detection process according to claim 101, wherein at least one of the first recognition species, the second recognition species, and the third recognition species is a hybrid comprising a natural or unnatural, single-stranded or double-stranded nucleic acid and an antibody or antibody derivative.

125. (New) The detection process according to claim 101, wherein the first recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid and the second recognition species is a hybrid comprising a natural or unnatural, single-stranded or double-stranded nucleic acid and an antibody or antibody derivative.

126. (New) The detection process according to claim 101,
wherein the first recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid;

wherein the second recognition species is a hybrid comprising a first natural or unnatural, single-stranded or double-stranded nucleic acid and a second natural or unnatural, single-stranded or double-stranded nucleic acid; and

wherein the third recognition species is a natural or unnatural, single-stranded or double-stranded nucleic acid.

127. (New) The detection process according to claim 101,
wherein the first recognition species is an antibody or an antibody derivative;
wherein the second recognition species is an antibody or an antibody derivative; and
wherein the third recognition species is a is an antibody or an antibody derivative.

128. (New) The detection process according to claim 101, wherein at least one of
the first marker and the second marker is a disease pathogen, disease marker, toxin, and
allergen.